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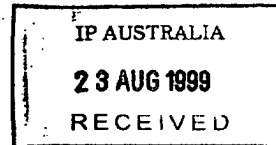
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(54) Title: METHOD FOR ACTIVATING THE FUNCTIONS OF AN ELECTRICAL APPARATUS

(54) Bezeichnung: VERFAHREN ZUR AKTIVIERUNG VON FUNKTIONEN EINES ELEKTRISCHEN GERÄTES

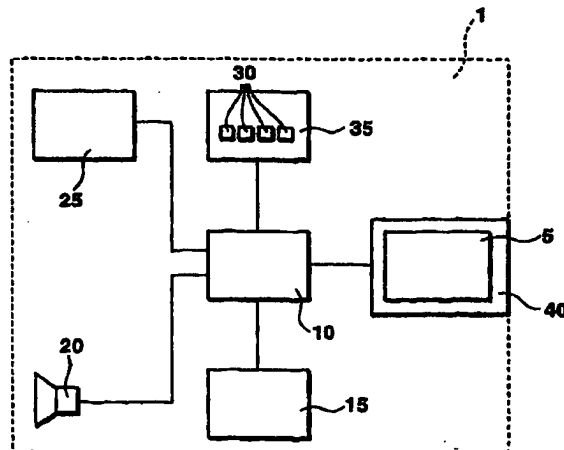
## (57) Abstract

Disclosed is a method for activating the functions of an electrical apparatus (1), preferably a car radio. A test routine memorized in a storage area (5) allocated to the apparatus is processed by a control device (10) of the electrical apparatus (1). At least one function of the electrical apparatus (1) is activated by the control device (10) on the basis of control commands previously stored in the test routine. Information on the recently activated function is shown on a display device (15, 20, 25) of the electrical apparatus (1).

## (57) Zusammenfassung

Es wird ein Verfahren vorgeschlagen, das zur Aktivierung von Funktionen eines elektrischen Gerätes (1), vorzugsweise eines Autoradios dient. Dabei wird eine in einem dem Gerät (1) zugeordneten Speicherbereich (5) abgelegte Testroutine von einer Steuerung (10) des elektrischen

Gerätes (1) abgearbeitet. Von der Steuerung (10) wird aufgrund von in der Testroutine vorgegebenen Steuerbefehlen mindestens eine Funktion des elektrischen Gerätes (1) aktiviert. An einer Wiedergabevorrichtung (15, 20, 25) des elektrischen Gerätes (1) werden Informationen über die gerade aktivierte Funktion wiedergegeben.



**METHOD FOR ACTIVATING THE FUNCTIONS  
OF AN ELECTRICAL APPARATUS**

**Prior Art**

5 The invention relates to a method for activating the functions of an electrical device.

Methods for activating functions of an electrical device are known, for example for car radios. Here, functions of the car radio can be activated by the actuation of operating elements of an operating unit of the car radio by a user. An information device for  
10 operated devices of vehicle are known from EP 0 675 018 A1. The information device comprises a screen and a selection device for various types of operation of the screen display. In it, an own type of operation is proposed, which is categorised as user information and with which the elements individually allocated to the devices control a control device for a memory. The control device extracts data allocated to the operating  
15 elements and displays it on the screen.

**Summary of the Invention**

According to the invention there is provided a method for activating the functions of an electrical device, wherein a test routine stored in a storage area allocated to a device is run  
20 by a control, at least one function of the electrical device is activated by the control on the basis of control commands predetermined in the test routine and information about the operation of the currently activated function is shown on a display of the electrical device.

**Advantages of the Invention**

25 The method of the invention has the advantage over prior art, that a test routine stored in a storage area allocated to the device is run by a control of the electrical device, that the control activates at least one function of the electric device and that, on a display of the electric device, information on the currently activated functions is shown.

30 A learning program can be realised in this way which guides the user through the operation of the electrical device. The functions of the electrical device are introduced one after another according to the execution of the test routine by means of the control of the electrical device to the display device. This leads to a marked increase in operating convenience for the user, as the user need not read through the operating instructions.



Furthermore, the user can carry out the operation of the electrical device directly on the electrical device, so that misunderstandings, which can arise during the reading of the operating instructions, are largely avoided.

- 5 Furthermore, a substantial cost saving results as operating instructions can be completely dispensed with. Operating instructions of this kind are becoming more and more comprehensive by reason of the description of performance characteristics of corresponding electrical devices and consequently result in greater packing problems and costs. These disadvantages are avoided by means of the method of the invention in which  
10 separate operating instructions in written form can be dispensed with.

It is advantageous that, dependent on the information, at least one operating unit of the electronic device is allocated a function, so that the at least one function can be controlled by the at least one operating element. In this way, the learning program can present at least  
15 one function interactively to the user. That is, the user can – already during the course of the self-teaching program – try out the operation of the electrical device on the electrical device itself using the instruction of the information reproduced on the reproduction device. The user is trained on the device itself in this way. By this means, a later operation of the electrical device is simplified for him.

- 20 A further advantage exists in that, on the display, by means of the information instructions for the activating of the at least one function by means of at least one operating element of the operating unit of the electrical device are reproduced. In this way, the functionality of the electrical device is increased and used for the reproduction of the operating  
25 instructions. A separate operating instruction can be saved by this means and a clear reference of the information shown on the display to the operating elements required for the activating of the at least one function can be made, especially when a local allocation of the operating elements to the display on the electrical device exists. Here, operating elements can be positioned alongside one another to form a reproduction device designed  
30 as a display or be illuminated for the activating of a function to active operating elements, if necessary in a given sequence.



A further advantage exists in the test routine being run dependent on the actuation of at least one operating element of the operating unit of the electrical device of the control. In this way, the user can adapt the sequence of the test routine process to his needs, that is, for example, to skip prescribed functions of the electrical device whose operation he already knows. By this means, convenience and user-friendliness are further enhanced.

A further advantage exists in that the displayable data displayed on the display device dependent on the test routine can be stored in compressed form in the storage area. In this way, memory can be saved. Alternatively, more information or information on more functions can be stored in the memory.

Another advantage exists in that, during the processing of the test routine, a checking of the at least one function can be carried out. In this way, the functionality of the test routine is increased. At the same time, the operating convenience is enhanced, as the user is supported by the test routine in the case of a function test of the electrical device by means of the information offered him by the display device.

A further advantage exists in that, dependent on the test routine in the memory area, test signals stored are called up dependent on the control for function settings of the electrical device. In this way, the user can be supported for function settings, for example for equalising settings, by the test routines which make the required test signals available for the user without the operating effort of the user and supports the functional adjustments also by means of appropriate information on the display device. By this means, operating convenience is further enhanced for the user.

Another advantage exists in that a storage medium, which comprises the memory device and is inserted in the electrical device is enabled only with a predetermined key combination to the operating unit. In this way, protection of the storage medium against theft is possible even without a card allowing right of access. The self-teaching program could therefore be used by several users, for example in a specialist business, in order for their becoming acquainted with the electrical device. The



electrical device would therefore also be operable by the various users without various access cards and the storage medium would still be protected against theft.

A further advantage exists in that the control commands of the test routine are stored in the gaps between speech and/or music data on a storage medium 40 designed as an audio compact disc. In this way, an audio compact disc can be used as a storage medium, so that the cost of manufacture and material for a special storage medium for the storage of control commands can be saved. The operating convenience for the operator is increased, as he can use audio compact discs both for operating instructions and for the enjoyment of music.

#### Drawing

An embodiment of the invention is shown in the drawing and is described in some detail in the following. Figure 1 shows a block diagram of an electrical device designed as a car radio and Figure 2 a sequence chart for the control of the electrical device.

#### Description of the embodiment

In Figure 1 indicated with 1 is an electrical device designed as a car radio. A storage area 5 is allocated to the car radio 1. The storage area 5 is shown in this embodiment on a storage medium 40 designed as a compact disc, but can be arranged fixed in the electrical device 1 or outside the electrical device 1 but allocated to the electrical device 1 or connected to the electrical device 1 and designed, for example, as Read Only Memory (ROM) or as Random Access Memory (RAM). The storage medium 40 can also be designed as an access card whose stored data is read by a corresponding card reader in a card box arranged, if necessary, in the car radio 1. The access card can feature a memory chip and/or a magnetic strip and/or similar which will comprise the memory area 5.



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The compact disc 40 is inserted into a compact disc player of the car radio 1. The compact disc player can, however, also be attached externally, for example in the form of a compact disc changer, to the car radio. The car radio comprises a control 10, which is connected to the storage area 5. Apart from this, an operating unit 35 is attached to the control 10, which comprises operating elements 30. Furthermore, an acoustic reproduction unit 20 designed as a loudspeaker is connected to the control 10. Alternatively, a display device 15 and a printer 25 can be attached to the control 10.

Many car radios can be seen at present in specialist stores whose operating panels look relatively identical and, as a rule, have a similar arrangement of the operating elements. There is a shortage of sales staff in the increasingly important specialist markets and the level of advice with respect to the price question moves increasingly into the background. Specialist personnel often lack the time to explain more than the basic functions of the various radios.

The increase in the comprehensiveness of operating instructions due to the increase in the number of functions represents a further problem for the user. This leads to the loss of time and motivation to read the operating instructions.

According to the described embodiment, car radios are in a position to explain themselves and also save the trade sales personnel.

In the storage area 5 of the compact disc 40, which can also be designed as a CD-ROM is a test routine. The test routine is processed by the control 10 and serves to activate the functions of the car radio 1. During the running of the test routine, the control 10 effects the display of data on the display 15 and/or on the loudspeaker 20 and/or on the printer 25. The data is also stored in the storage area 5 of the compact disc 40. After the compact disc 40 is inserted into the player corresponding to the car radio 1 and after the activating of one of the operating elements 30, a demonstration program is started and, for example, animated graphics combined, perhaps, with speech and music appear on the car radio 1. If necessary, by means of one of the operating elements 30, the control 10 can be effected to switch between acoustic



display from the loudspeaker 20 and the optical display on the display 15. If a user turns toward the car radio and activates one of the operating elements 30, he interrupts the test routine program and starts a subprogram which guides him through functions of the car radio 1, at least, however, through a function of this kind. On the basis of the control commands existing in the test routine or of the corresponding subprogram, the control 10 activates the corresponding functions of the car radio 1. On the display 15 and/or over the loud speaker 20 and/or on the printer 25 information on the currently active function is reproduced. By means of the information, instructions for the activating of the corresponding functions by means of at least one of the operating elements 30 are displayed. In this way, the operating characteristics of the car radio 1 are explained in detail.

The user is led, for example, by means of a verbal user guide stored on one of these compact discs 40 through the functions of the car radio 1. The necessary operation commands are stored in short gaps between speech and/or music data. The control 10 of the car radio 1 decodes this data. By the recognition of certain data sequences to be entered, these are evaluated as control commands. In this way, conventional audio compact discs can be used as storage media 40. The compact disc 40 can also contain a part, which corresponds to the data format of a CD-ROM. Then, for example, a conventional operating instruction of the car radio 1, an installation instruction for the installation area of a vehicle and/or similar can be stored.

The test routine or the corresponding subprogram can be processed dependent on the activity of at least one of the operating elements 3 of the control 10. This means that the user can control the running and the content of the test routine or the corresponding subprogram by actuating at least one of the operating elements 30 and in so doing can adapt it to his requirements. The user can therefore be informed only concerning the functions of the car radio of interest to him or which he does not yet know by the test routine or the corresponding subprogram. He can skip other functions.

Furthermore, it can be so arranged that at least one of the operating elements 30 is allocated to the activating function or the corresponding subprogram dependent on the





displayed information so that this function is controllable by means of at least one operating element 30. In this way the user can use the activated function by means of the test routine or the corresponding subprogram interactively and, for example, try it out in order to become acquainted with it. If the display 15 is arranged alongside the operating unit 35 or the operating elements 30, then the information shown on the display 15 can be spatially allocated to the corresponding operating elements and, if necessary, can be illuminated for marking. In this way, incorrect operation by the user can be avoided.

The displayable signals on the loudspeaker 20 during the running of the test routine or the subprogram are digitally stored in the storage area and must be converted before display over the loudspeaker 20 by the control 10 in analog speech signals. In order to save storage space in the storage area 5, the speech signals there can be digitally stored as mono-speech signals as the self-teaching program need not have optimal speech or tone quality. The displayable data shown on the display 15 and/or the printer 25 can also be digitally stored in the storage area 5 for the storage of data displayable on the display 15 and/or on the loudspeaker 20 and/or in the printer 25 can also be realised by means of the digitising of this data before storage. In this way, a larger amount of data can be stored in the storage area 5 of the compact disc 40 and by this means a greater performance of the car radio for running the self-teaching program and the description of the functions of the car radios 1 are taken into account. More data can then be stored in the storage area and more user facilities of the car radio 1 can be described through the self-teaching program.

For the saving of storage space in the storage areas, displayable data can, dependent on the test routine or the corresponding subprogram, be compressed in other ways, for example by the use of an appropriate coding process and stored in the storage area 5.

It can also be so planned that, when running the test routine by means of the control 10, a checking of at least one of the functions of the car radio 1 can be carried out.

Furthermore, test signals could be stored in the memory area 5, which can be called up during the running of the test routine by the control 10. The test signals can, for



example, be sweeping signals and be evaluated for an automated equaliser setting. It can, however, also be planned that the control 10 effects a display of the test signals on the loudspeaker 20 and/or on the display 15 so that the user can undertake, by at least one of the operating elements 30, the equaliser settings used as an example on the basis of the displayed test signals himself according to his needs.

Especially for the case of the presentation of the car radio 1 in the specialist shop the car radio 1 can be prepared, without the access card, ready for operation so that the compact disc 40 can operate without the access card. The loss of such a card would, then, not lead to the non-useability of the car radio 1. In order to guard against theft, however, and to release the sales personnel from legal responsibility, it can be planned that the compact disc 40 be enabled only with one given key combination on the operating unit 35.

For the case that a car radio 1 according to the invention makes the use of operating instructions superfluous, service telephone numbers, service centre addresses, catalogue pages and a system calibration program for the checking of the function of an own operating function can be shown on the display 15. Further, information on an entire device family could be stored on the compact disc 40 and be displayed by means of an own information operation function of the car radio 1 on the display 15.

In Figure 2 a progress chart for the operating principle of the control for the running of the self-teaching program is depicted. In a program point 100, the control tests whether the test routine was activated through the activation of one of the operating elements 30. If this is the case, a branching to a program point 105 takes place, otherwise a branching to a program point 135 occurs. In program point 135 a timing loop is moved through. Then it is branched back to program point 100. At program point 105 the control 10 effects the activating of a function of the car radio 1. Then a branching to a program point 110 takes place. At program point 110, the control 10 occasions a display of stored information over the currently activated function of the car radio 1 on the display 15 and/or on the loudspeaker and/or on the printer 25. In this way, the user is enabled to acquaint himself with the function currently activated on the car radio 1 through the test routine as the information includes instructions for



the activating of the function by means of one of the operating elements 30. In the display of information according to program point 110, activation can also take place of at least one of the operating elements 30 for the interactive use of the currently activated function or for the control of the running of the program of the test routine. The operating element or elements 30 correspondingly activated in this way can also be marked, for example, by means of illumination and/or by means of spatial allocation of the representation of information on the display 15 to the correspondingly activated operating element 30 in the case of neighbouring arrangement of the operating unit 35 and the display 15. Then a branching to a program point 115 occurs. At program point 115, the control checks whether the user input has taken place at the operating unit 35. If this is the case, a program point 130 is branched to. At program point 120 the control 10 checks whether by means of the user input a test program for checking the currently activated function has been called up. If this is the case, a program point 125 is branched to, otherwise a program point 145 is branched to. At program point 125, the control 10 effects the calling up of a test subprogram from the storage area 5 for the checking of the currently active function of the car radio 1. The currently active function can be checked interactively by the user by means of the operating unit 35 on the basis of test information shown on the display 15 and/or on the loudspeaker 20 and/or from the printer 25. The test information is also stored in the storage area 5 and is loaded by the control 10 for the carrying out of the test subprogram and is brought for displaying on the display 15 and/or on the loudspeaker 20 and/or on the printer 25. After program point 125 a branching to a program point 130 is made. At program point 130 the control checks whether the end of the test routine was reached. If so, the program part is left, otherwise program point 105 is returned to. The next function of the car radio 1 is activated at this point and the last activated function of the car radio is deactivated. At program point 145 the control 10 checks whether, by means of user input, an interactive operation of the currently activated function of the car radio 1 is effected. If this is the case, program point 150 is branched to, otherwise program point 140 is branched to. At program point 150 the control 10 effects, on the basis of the user input, a corresponding control or application of the currently active function of the car radio 1. According to the control of the currently active function, a skipping of the currently active function can be effected by means of the operation of the user if, for



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example, the user knows this function. In this case, the control 10 causes the deactivating of the currently activated function of the car radio 1. After program point 150, program point 130 is branched to. At program point 140, the control 10 tests whether, by means of the user input, a truncation of the test routine was caused. If this is the case, the part of the program is left, otherwise program point 130 is branched to.

The method of the invention is not limited to car radios. Rather, it is applicable to all electrical devices with operating functions, for example to telephones, mobile phones, televisions, compact disc tuners, cassette car radio players, compact disc changers, compact disc players, household devices such as washing machines, etc.

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The claims defining the invention are as follows:

1. A method for activating the functions of an electrical device, wherein a test routine stored in a storage area allocated to a device is run by a control, at least one function of the electrical device is activated by the control on the basis of control commands predetermined in the test routine and information about the operation of the currently activated function is shown on a display of the electrical device.
2. The method according to Claim 1, wherein said electrical device is a car radio.
3. The method according to Claim 1 or Claim 2, wherein dependent on the information, at least one operating element of an operating unit of the electrical device is assigned to the at least one function so that the at least one function is controllable by means of the at least one operating element.
4. The method according to any one of the preceding claims, wherein by means of the information instructions for activating the at least one function are displayed through at least one operating unit of the operating unit of the electrical device.
5. The method according to any one of the preceding claims, wherein the test routine is run by the control dependent on the activation of at least one operating element of the operating unit.
6. The method according to any one of the preceding claims, wherein displayable data in compressed form is stored in the storage area on the display device dependent on the test routine.
7. The method according to any one of the preceding claims, wherein during the running of the test routine by the control a test of at least one function is carried out.
8. The method according to any one of the preceding claims, wherein dependent on the test routine in the storage area stored test signals for function settings of the electrical device are called by the control.



9. The method according to any one of the preceding claims, wherein a storage medium, which comprises the storage unit and is installed in the electrical device is enabled only with a given key combination to the operating unit.

5 10. The method according to any one of the preceding claims, wherein the information is displayed on a display device, an acoustic reproduction unit and/or a printer.

11. The method according to any one of the preceding claims, wherein the control commands of the test routine are stored in gaps between speech and/or music data  
10 on a storage medium designed as an audio compact disc.

Dated this 22<sup>nd</sup> day of July, 2002.

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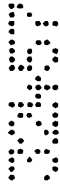
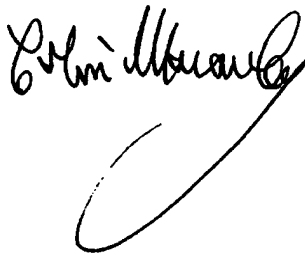


Fig. 1

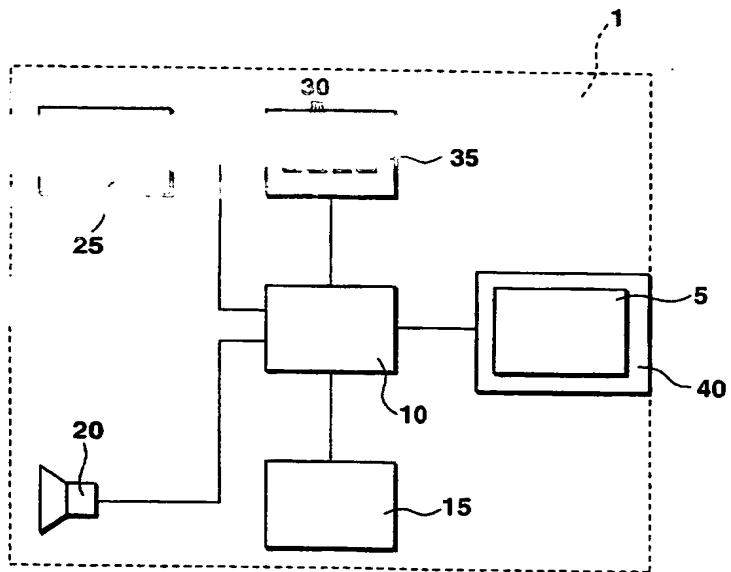
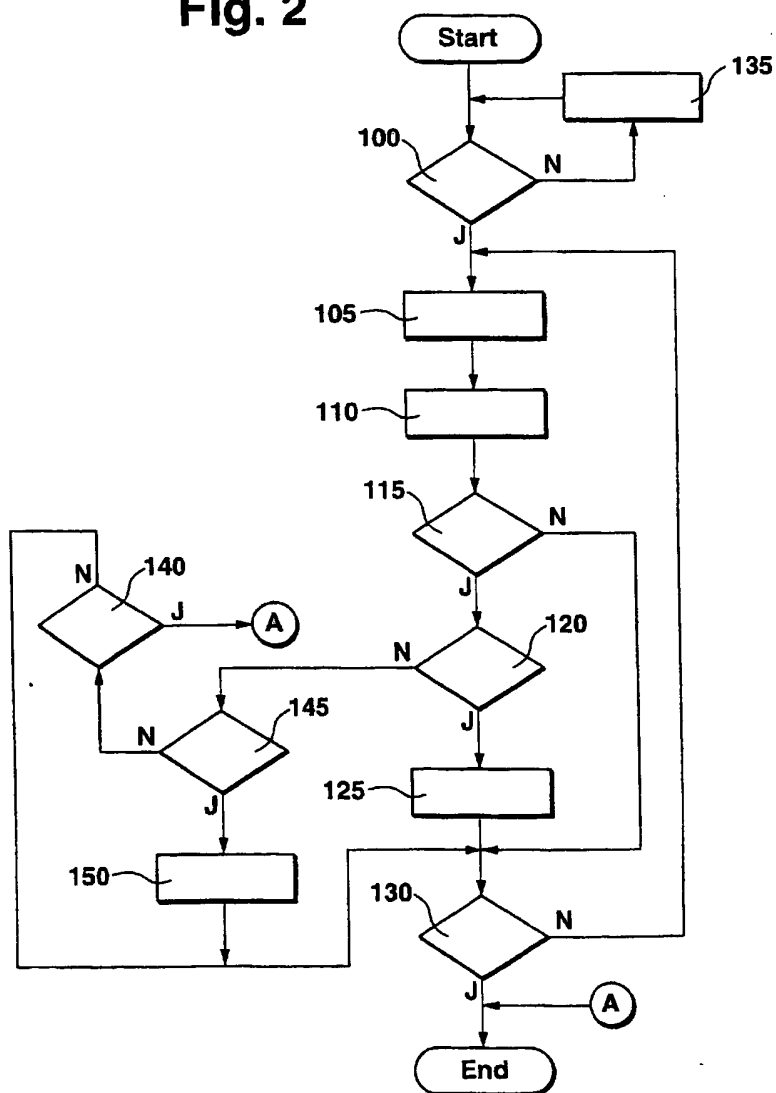


Fig. 2

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